THE GENUS *RHIPIDOCEPHALA* (DIPTERA : ASILIDAE)

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THE GENUS *RHIPIDOCEPHALA* (DIPTERA : ASILIDAE)

By H. OLDROYD

SYNOPSIS

Rhipidocephala Hermann and *Holcocephala* Jaennicke are two genera of Asilidae that have been recorded from both the Neotropical and the Ethiopian Regions. The differences between the two genera are discussed and redefined, and reasons are given for the view that the Ethiopian species belong to *Rhipidocephala* and the Neotropical species to *Holcocephala*. A wide view of the genus *Rhipidocephala* is advocated, discounting differences of antennal structure, and incorporating *Paroxynoton* Janssens and *Margaritola* Hull as synonyms. Twenty-four species are described, sixteen of them new, with a key to species, and figures of male and female genitalia.

In my key to the tribes and genera of African Asilidae (Oldroyd, 1963 : 7) I divided the genera of the tribe Xenomyzini into two groups, with a constant difference in wing-venation, but also differing in general appearance. The first group comprised the six genera *Oxynoton, Margaritola, Holcocephala, Oligopogon, Rhipidocephala* and *Paroxynoton*. *Oligopogon* stands apart from the rest, in body-shape, and in the possession of acanthophorites in the female, and requires a separate study. The other five genera are tiny, dark flies with broad, dark wings. *Oxynoton* Janssens, 1951 has a very distinctive, hump-backed development of the thorax, but the separation of the other four is based chiefly upon characters of the antennae, and is much less clear.

Understanding of the four genera, and of related forms in other regions, depends upon a clear assessment of *Holcocephala* and *Rhipidocephala*. These were both defined by Hermann (1926 : 154), who separated them in his key as follows :

> Apical style one-segmented, drawn out into a point; moustache shrunk to mouth-margin; mesonotum bare, or sometimes with scattered soft hairs. . . . . .
> ***HOLCOCEPHALA*** Jaennicke
>
> Apical style two-segmented, with a brush of hairs at tip; moustache reaching almost to bases of antennae ; mesonotum thickly covered with long, erect hairs . . .
> ***RHIPIDOCEPHALA*** Hermann

This gave the impression that antennal structure was the key to the separation of these two genera, a lead that was followed by Hull (1962 : 52) and by Oldroyd (1963 : 7). Hull's description of *Holcocephala* refers to " a characteristic, shallow, transverse groove, lying a short distance above the epistoma, which is absent from such Old World genera . . . as *Rhipidocephala* ", and study of Hermann's generic descriptions shows that *Rhipidocephala* was not, in fact, distinguished from *Holcocephala* upon antennal characters, but by details of the facial structure.

Text-figs. 2, 3 illustrate this difference, which is quite definite. In *Holcocephala* the frons and face are deeply recessed, exaggerating the " Goggle-eyed " aspect

proper to the tribe Xenomyzini, and the face has a transverse groove which cuts off a distinct epistomal ridge, to which the moustache is confined. The hairs of the moustache are few and bristly, and the median swelling of the face has only fine hairs. In *Rhipidocephala* (Text-fig. 2) the head is less withdrawn between the eyes, the ocellar tubercle is huge and prominent, and in particular there is no transverse groove across the face. The moustache often, though not always, extends over much

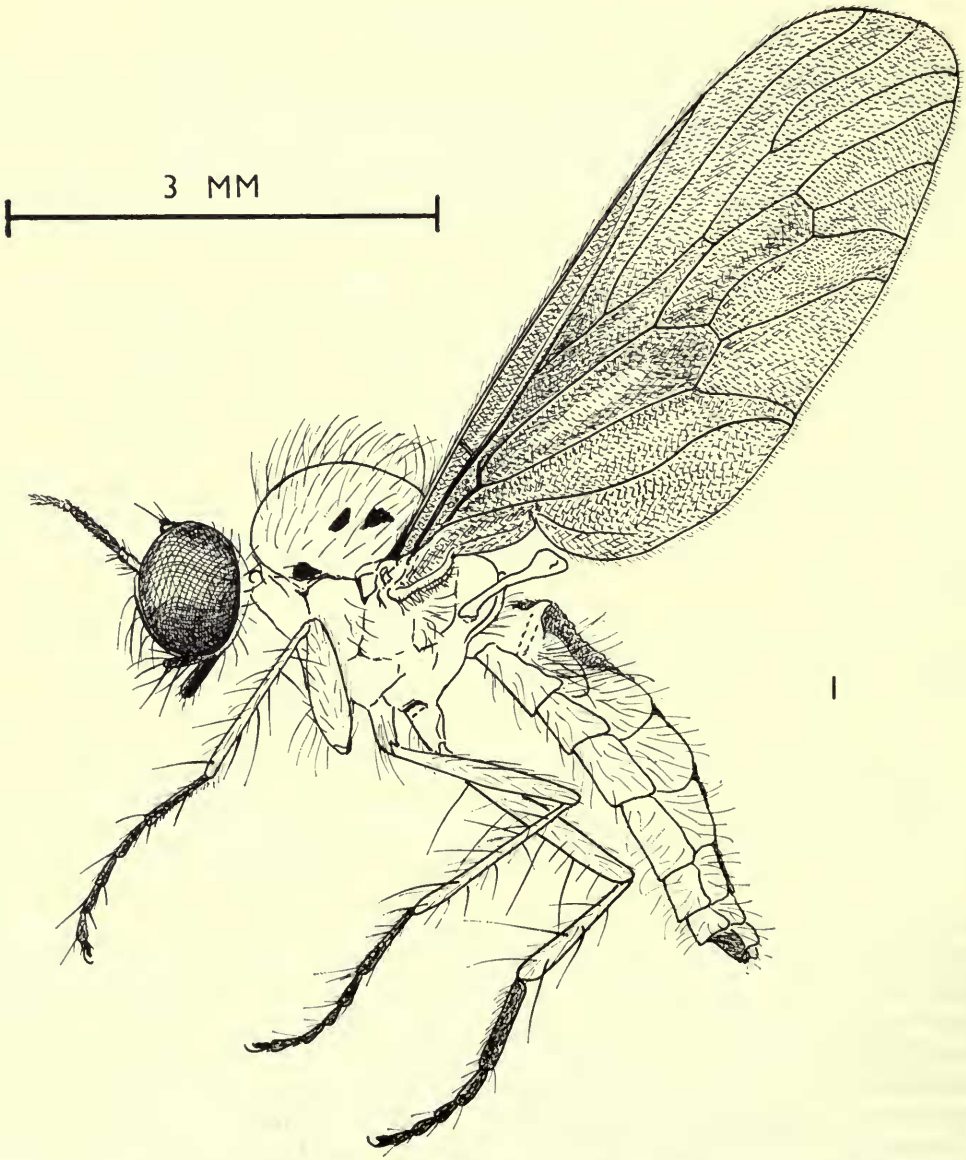
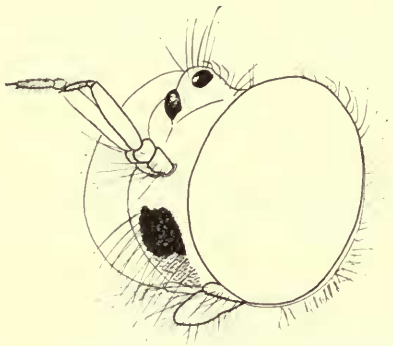


FIG. 1. *Rhipidocephala semitestacea* (Loew) ♀.

of the facial lobe, and this area is always darker than its surroundings, and in most species bears a bare, shining spot. Moreover, *Holcocephala* has the palpi relatively long and slender, the proboscis stout and awl-shaped ; *Rhipidocephala* has smaller, inconspicuous palpi and proboscis.

The antennae of *Holcocephala* show a high degree of constancy, with a conical style and an apical spine. Within the scope of *Rhipidocephala*, as now defined, there is much greater variation in antennal structure, and the question arises whether or not the genus should be still further divided, or whether the variations should be regarded as of specific value only. If the latter view is taken, then it is clear that *Margaritola* Hull and *Paroxynoton* Janssens must also be merged with *Rhipidocephala*.

Among the African species examined during the present study, four types of antennal structure can be recognized (Text-fig. 4, A–D). Species can be fairly clearly



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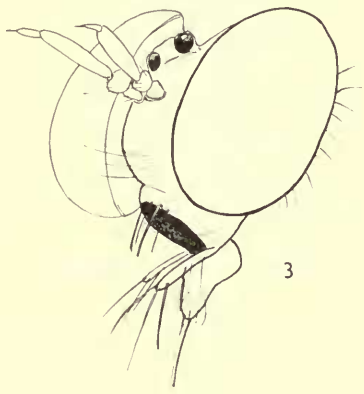

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FIGS. 2, 3. Heads of : 2, *Rhipidocephala* ; 3, *Holcocephala*. Showing generic differences in frons, face and palpi ; for antennae see text.

assigned to one or other of these types, though not without variation. Now Hermann (1926 : 175) says that the genitalia of all the *Rhipidocephala* known to him are yellow in colour, and that the ovipositor is conical, and divided into two lobes. This is so in several species, but it is by no means universal in the genus. Text-figs. 6–38 show some of the variants : many ovipositors are partly or wholly concealed ; and whether exposed or concealed, some are yellow, some black, some bilobed, some not. Moreover there is no correlation between the type of ovipositor and the type of antenna.

It seems, therefore, that there is no good reason for subdividing *Rhipidocephala* on the basis of either antennal or genital structure, and that one should retain the clearly-defined genus indicated by the head-structure as shown in Text-fig. 2, reducing *Margaritola* Hull and *Paroxynoton* Janssens to synonymy.

When defining *Rhipidocephala*, Hermann (1926 : 174) stated that it comprised the African species previously assigned to *Holcocephala*, as well as two species from the Neotropical Region : *analis* (Macquart), and *flavipes* Hermann.

The case of *analis* is rather complicated. Macquart (1846 : 69–70) based his *Discocephala analis* upon three specimens from Colombia, and one " exactly similar " from Port Natal in Africa. The specific description says that the wing-venation is the same as in *Discocephala rufiventris*, a synonym of *Dasypogon abdominalis* (Say, 1823), and undoubtedly a *Holcocephala* from the figures of wing and head given by Macquart. It seems, therefore, that the true *analis* Macquart is a Neotropical species of *Holcocephala*.

Hermann (1926 : 176) clearly based his account of *Rhipidocephala* on African species, and stated that the genus comprised the African species previously assigned to *Holcocephala*. The only evidence of any Neotropical species lay in two items : the above statement by Macquart about *analis* ; and the presence of Vienna in two species of *Rhipidocephala* in the von Winthem collection, one labelled Mexico, the other without locality, but presumed by Hermann to be from the same area. Hermann regarded the latter, without locality, as being probably *analis* Macquart, and made it the type-species of *Rhipidocephala*. The von Winthem specimen labelled " Mexico " he described as a new species, *R. flavipes* Hermann.

Through the kindness of Prof. Max Beier I have been able to examine this von Winthem material, and several points emerge. Firstly that the specimen labelled " *analis* " cannot be the *analis* of Macquart because its venation is not the same as that of *Holcocephala rufiventris* (Macquart). Therefore the type-species of *Rhipidocephala* must be :

Rhipidocephala analis Macquart ; Hermann = *angustior* Oldroyd, sp. n. (see below).

Under Art. 70(a) of the International Code of Zoological Nomenclature, this case of a misidentified type-species must be referred to the Commission, requesting a use of the Plenary Powers in support of choice number (1) : the nominal species actually involved, which was wrongly named in the type-designation.

Before such a case can be made out for submission to the Commission, it will be necessary to study not only the Neotropical but also the Oriental species involved in this complex of genera.

The specimen in Vienna bears several labels, written and printed, but the word " Mexico " appears only on a small *printed* label, apparently added at some later date.

There is thus no evidence of any *Rhipidocephala* from S. America, and none of any *Holcocephala* from Africa. Any distinction based upon antennal structure, such as the one in my key (Oldroyd, 1963 : 7) should be abandoned, and the genus *Rhipidocephala* based upon the structure of the head. In this respect, and in the closed anal cell, *Seabramyia* Carrera, 1958, is a variant of *Holcocephala* and not of *Rhipidocephala*.

As thus defined, *Rhipidocephala* takes in all the mainland species that have been described in the genera *Rhipidocephala*, *Holcocephala*, *Paroxynoton* and *Margaritola*. From Madagascar, *Holcocephala lambertoni* Bromley is a normal *Rhipidocephala*, but *Rhipidocephala hyalipennis* Oldroyd, 1959, is an *Oligopogon*.

It is a pity that the type-species selected by Hermann—*angustior* sp. n. (*analis* Macquart ; Hermann)—belongs to a small group of species that differ in some

respect from the majority of *Rhipidocephala*. They have no bare spot on the face, the abdomen dorsally is not membranous to the extent shown in Text-fig. 5, and the ovipositor is unusually long and stout (Text-figs. 32, 38). None of these characters is constant. In particular, the dorsum of the abdomen shows varying degrees of membranous development, and may have no more than a well-developed cleft between segments one and two.

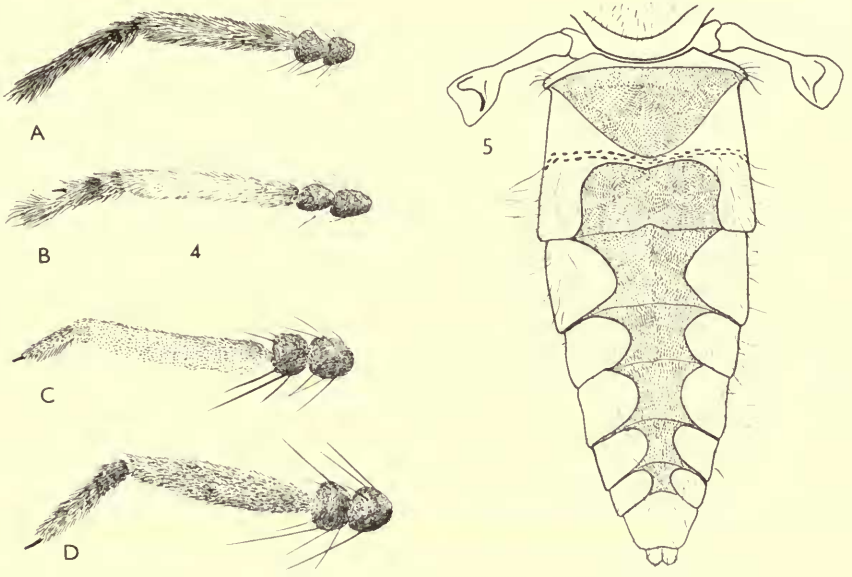


FIG. 4. Range of antennal structure within the genus *Rhipidocephala*, with examples of four principal types : A–D.

FIG. 5. *Rhipidocephala morio* Hermann. Dorsum of abdomen, showing extent of membranous area.

RHIPIDOCEPHALA Hermann, 1926

Rhipidocephala Hermann, 1926, *Verh. zool.-bot. Ges. Wien* **74** (**1924/25**) : 174 ; Oldroyd, 1959, *Mém. Inst. scient. Madagascar* (E) **11** : 276 ; Hull, 1962, *Robber Flies of the World* : 64.

Type-species : *Rhipidocephala angustior* Oldroyd, sp. n., for *analis* Macquart ; Hermann, by original designation.

Paroxynoton Janssens, 1953, *Bull. Inst. r. Sci. nat. Belg.* **29** : 11, **syn. n.**

Type-species : *Paroxynoton tigrinum* Janssens, 1953, by original designation.

Margaritola Hull, 1958, *Proc. ent. Soc. Wash.* **60** : 255, **syn. n.**

Type-species : *Margaritola mirabilis* Hull, 1958, by original designation.

Head. As shown in Text-fig. 2, only slightly recessed at vertex, but with a very large and prominent ocellar tubercle. Face smoothly rounded, not deeply recessed along eye-margins, and without transverse groove delineating epistoma (cf. *Holcocephala*, Text-fig. 3). Moustache consisting of scattered, relatively fine, bristly hairs, except in a few species, where they are darker and stronger ; these hairs often extending over lower four-fifths of face, though sometimes reduced to vicinity of epistoma. Frons and face covered with tomentum, often darker on frons, but sometimes unicolorous ; most species have an ovoid area that is bare, shining and usually black, lying either dorsal to moustache, or with part of moustache growing from it. Palpi and proboscis relatively shorter than those of *Holcocephala*, and inconspicuous, though palpi have long and rather stiff bristles.

The antennae, a feature of special interest in this genus, have already been discussed. They are less constant in form than those of *Holcocephala*, and cover the four types shown in Text-fig. 4, but with intermediates. Generally the second of the microsegments has long pile.

Thorax moderately convex, though slightly rounded in one or two species, never with an acute angle as in *Oxynoton francoisi* Janssens. Mesonotum normally heavily covered with tomentum, rarely with small bare spots (Text-fig. 1) or shining through thin tomentum ; normally grey with a dark brown pattern, consisting of a median stripe, broad and even divided anteriorly, but tapering strongly posteriorly, flanked by two lateral spots. Small modifications of this pattern are very constant, and make useful recognition features in practice, though difficult to define in a key to species. Most species have long, erect, curved hairs, especially posteriorly and on scutellum, which has no distinct marginal bristles. Pleura undistinguished, with a few hairs on mesopleuron, and with a row of stronger ones before halteres.

Abdomen remarkable for excavation of the dorsum into a membranous trough (Text-fig. 5). Second tergite retains a narrow bridge across its middle, but otherwise tergites as far back as seventh segment are broken into two widely separated sclerites. This membranous area of abdomen seems to be confined to the two genera *Holcocephala* and *Rhipidocephala*, as here defined. It is not always so fully developed, and in one or two species is restricted to first segment, or first two ; sometimes indicated merely by wrinkling of dorsal surface.

Genitalia of both sexes show good specific differences, with a wide range of shape and relative size (Text-figs. 6–38).

Legs unremarkable, without swellings or special structures, but—with some variation—their colour is of use in distinguishing species ; covered with short hairs and long, slender bristles, all of which are normally pale yellow.

Wings (Text-fig 1) relatively broad, often expanded basally by broadening of costal and axillary cells. Venation simple, primitive ; anal cell open or closed just before margin [closed and stalked in *Holcocephala*], all other cells open on wing-margin.

Size rather constant at about 5–6 mm., both for body-length and for length of one wing.

Key to Species

1 Face with a shining, bare spot, usually black (Text-fig. 2). Frons with few or no hairs laterally, along eye-margins. Abdomen extensively membranous dorsally (Text-fig. 5) 2

– Face entirely tomented, without any bare spot. Frons with long hairs laterally, along eye-margins. Abdomen with membranous areas usually incompletely developed, or confined to first two segments 19

2 Mesonotum without well-developed bare spots, though tomentum may be thin all over, and then mesonotum appears rather shining, black 3

– Mesonotum covered with bronze tomentum, which leaves bare and shining black the humeri and two well-defined, round spots on each side. (Text-fig. 1)
semitestacea (Loew) (***punctulata*** Wulp) (p. 152)

3 Mesonotum without the distinctive long, curved hairs, though a uniform covering of short hairs may be present 4

– Mesonotum and scutellum with long, curved hairs, at least posteriorly, conspicuous in side view 6

4 Legs and abdomen reddish yellow. Mesonotum shining black through thin layer of bronze tomentum, and with short yellow hairs. Moustache includes bare area of face . . . . . ***mirabilis*** (Hull) (p. 153)

– Legs and abdomen entirely black or ashy grey. Mesonotum not at all shining black. Moustache confined to mouth-margin, and arising from tomentum; bare area of face lies dorsal to moustache. 5

5 Mesonotum humped, with chocolate-brown tomentum; darker stripes hardly visible . . . . . ***obscurata*** sp. n. (p. 154)

– Mesonotum not unusually humped, grey posteriorly, with 3 distinct black stripes anteriorly . . . . . ***divestita*** sp. n. (p. 156)

6 Legs conspicuously reddish yellow, at least in part 7

– Legs entirely black, except narrowly at knees 13

7 Femora uniformly black, contrasting strongly with reddish bases of tibiae. . . . 8

– Femora partly or wholly reddish 9

8 Postscutellum grey, concolorous with mesonotum. . ***tigrina*** (Janssens) (p. 156)

– Postscutellum brown, contrasting with mesonotum . . ***inconspicua*** sp. n. (p. 157)

9 Mesonotal pattern unique; the 3 stripes reduced to a transverse row of three brown spots, and mesonotum entirely grey both anteriorly and posteriorly ***distincta*** sp. n. (p. 157)

– Mesonotum not so patterned 10

10 Mesonotum yellow-grey, with short median stripe and a conspicuous brown triangular spot on each side before the suture. Hind femora almost entirely reddish yellow ***fulva*** sp. n. (p. 158)

— Mesonotum dull brown with indistinct stripes. Hind femora reddish yellow, or black with yellow tips 11

11 Hind femora entirely reddish yellow; fore and middle femora black with yellow tips ***flavipes*** Hermann (p. 159)

— All femora black with yellow tips 12

12 Mesonotum densely hairy, and mostly dull brown, stripes extending from front to rear ***umbripennis*** (Loew) (p. 159)

— Mesonotum sparsely hairy, and stripes short . . ***tenera*** sp. n. (p. 161)

13 Mesonotum almost uniformly ashy grey, with only a faint trace of the 3 darker stripes ***zumpti*** sp. n. (p. 161)

— Mesonotum not uniformly ashy grey 14

14 Mesonotum dull black-brown, without any definite pattern, or with only indistinct stripes, and not noticeably more grey either anteriorly or posteriorly 15

— Mesonotum with 3 distinct brown stripes, sometimes entirely grey either anteriorly or posteriorly 16

15 Antennae at least as long as head, microsegments relatively long; second microsegment with a dorsal spine, but with only a short pile. Mesonotum not strongly convex, little higher than vertex . . . . . ***caffra*** (Macquart) (p. 162)

— Antennae not longer than head, third segment relatively short; second microsgment with no dorsal spine, but with long hairs. Mesonotum strongly convex, extending well above vertex, and with long hairs posteriorly. . . ***morio*** (Hermann) (p. 163)

16 Thoracic stripes extending from anterior margin of mesonotum almost to posterior margin 17

— Thoracic stripes shorter, leaving either anterior or posterior third of mesonotum grey 18

17 Moustache black. Mesonotum with a pair of parallel median stripes, replaced posteriorly by a single stripe just before scutellum. Mesopleuron wholly yellowish brown, forming a band from fore coxae to humeri . . ***signata*** (Hermann) (p. 163)

— Moustache pale yellowish. Mesonotum with a heavily marked, solid, median stripe, narrowing and disappearing posteriorly, with no median prescutellar stripe. Mesopleuron mainly grey, brown only dorsally . . ***congoiensis*** sp. n. (p. 164)

18 Mesonotum conspicuously marked, with three brown stripes coalescing in anterior half; posterior half entirely grey with long, yellowish hairs: scutellum grey. Genitalia black . . . . . ***scutata*** sp. n. (p. 166)

— Mesonotum grey anteriorly ; posteriorly, brown stripes show rather indistinctly; scutellum brown. Genitalia reddish yellow, conspicuous. . . ***engeli*** sp. n. (p. 166)

19 Costal margin of wing expanded by broadening of costal cell 20

— Costal margin of wing not expanded ; costal cell narrow 23

20 Sides of abdomen with recumbent yellow hairs. Female with a conspicuous, shining ovipositor (Text-fig. 32) . . . . . ***fimbriata*** sp. n. (p. 167)

— Sides of abdomen without conspicuous, yellow hairs. Female with normal, inconspicuous ovipositor 21

21 Ashy grey and brown species. Head with grey tomentum and long, brown hairs on frons, antennae, moustache and occiput. Thorax with grey and brown tomentum and long, brown hairs, especially in mesopleural and metapleural tufts ***manicata*** sp. n. (p. 167)

— Black-brown species with hairs pale yellowish or white. Frons chocolate-brown, contrasting with yellowish grey face. Hairs all pale. Mesopleural and metapleural tufts also pale 22

22 Tibiae orange with black tips. Hairs of body, especially those of mesopleuron, yellow . . . . . ***speciosa*** sp. n. (p. 168)

— Legs all black. Hairs of body whitish, those of mesopleuron silvery ***doornensis*** sp. n. (p. 169)

23 Slender species, with legs entirely black ***quadrifaria*** Hermann (p. 169)

— Robust species, with tibiae and tarsi bright orange ***angustior*** sp. n. (p. 170)

Rhipidocephala semitestacea (Loew)

Discocephala semitestacea Loew, 1863, *Wien. ent. Monat.* **7** : 11.
Rhipidocephala semitestacea (Loew) Hermann, 1926, *Verh. zool-bot. Ges. Wien* **7** : 178.
Holcocephala punctulata Wulp, 1899, *Trans. ent. Soc. Lond.* **1899** : 88, **syn. n.**

Loew's paper of 1863 described specimens collected by C. Tollin at Bloemfontein. The types are not in Vienna, and Horn's list states that the Tollin material was scattered. Some of it may be in the v. Roeder collection in Halle.

Loew's original description of *semitesatcea* is short :

♂ Fusca, fusco-pollinosa, opaca, thorace non vittato, abdomine pedibusque testaceis, tarsis apicem versus fuscis, alis nigris ; antennae nigrae, stylo terminali breviusculo, in apice pilis minutis nigris penicillato ; mystace pilisque palporum nigrorum dilute subfuscis : long corp. 2 lin. ; long. al. 2¼ lin.

Obs. Stylus antennarum penicillatus ut in Oligopogonibus, sed reliqua omnia ut in Discocephalis genuinis, a quibus non separanda.

Hermann (1926 : 178) repeated the last observation, but had clearly not seen the type, nor was it among the *Rhipidocephala* lent to me from the Vienna Museum by Dr. Max Beier.

Specimens in the British Museum, determined by Engel, agree with the original description as far as it goes. These specimens are distinct in having the black mesonotum uniformly obscured by bright yellow tomentum, except for the humeri

and for two small, round, bare, black spots on each side, exactly as in *punctulata* Wulp. The latter is authentically represented in the British Museum by specimens from Aden and Somaliland, and these are indistinguishable from the South African specimens, even in genitalia.

Thus, although the type localities of the two species are so far apart that their synonymy seems inherently improbable, it is not possible at the moment to find any difference between them.

♂ *Head.* Frons and face uniformly covered with dense yellow tomentum, except for large, bare, brownish area occupied by sparse yellow moustache. Antennae of type A (Text-fig. 4), black, first two segments with yellow tomentum and yellow hairs. Proboscis and palpi black-brown with yellow hairs. Occiput covered with yellowish grey tomentum and with yellow hairs along eye-margins.

Thorax. Mesonotum shining black in ground colour, normally with uniform covering of dense brassy yellow tomentum, except for humeri and two small, rounded spots on each side, which are bare, shining black, and very conspicuous (Text-fig. 1). Clothing hairs yellow, long and erect. Scutellum with brassy tomentum and yellow hairs. Pleura covered with greyish yellow tomentum, a little browner anteriorly ; hairs bristly yellow, confined to anterior area of mesonotum, and to metapleural tuft in front of halteres.

Abdomen entirely bright orange, with brassy tomentum and long, yellow hairs. Male genitalia as in Text-fig. 6. Tergites membranous as shown in Text-fig. 5, but being almost concolorous with sclerites, this area is not obvious in dried specimens.

Legs. Coxae like pleura ; femora and tibiae yellow-brown ; tarsi darker. Hairs and bristles yellow.

Wings uniformly dark brown. Halteres with large yellow knob.

Length of body 5 mm. ; of wing 4·5 mm.

♀ similar. Ovipositor compact, eighth tergite short, partly bare and shining, lamellae little prominent.

Holotype of *semitestacea* ? in Halle ; of *punctulata* in Hope Museum, Oxford.

Distribution. S.W. Africa : Okahandja, ii-iii.1928 (*R. E. Turner*) , Grootfontein, i.1920 (*R. W. Tucker*) ; Waterburg, ii.1920 (*R. W. Tucker*) ; Narebis, ii.1921 (*F. Barnard*). Cape Province : Worcester, 17–31.viii.1928 (*R. E. Turner*).

Tanganyika : N.E. Kondoa, v.1955 (*J. F. Lamerton*)—this specimen forms a link between the above S. African localities and the following :

Somaliland : Bohotle, 1903 (*A. F. Appleton*). Aden : 16.iii.95 (*C. G. Nurse*). Wulp's original type material of *punctulata*, from Aden, was collected by Col. Yerbury.

Rhipidocephala mirabilis (Hull)

Margaritola mirabilis Hull, 1958, *Proc. ent. Soc. Wash.* **60** : 255 ; 1962, *Robber Flies of the World :* 66, **comb. n.**

Though this species was made the type of a new genus, it clearly belongs in *Rhipidocephala*, as defined in the present paper. The antennae, of type A (Text-fig. 4) are not unique in the genus, and indeed the species is quite close to *semitestacea*. Some specimens of *semitestacea*, especially those with the thorax greasy, could easily be mistaken for *mirabilis*, and the single specimen of *mirabilis* in the British Museum collection was originally labelled *semitestacea* by Engel.

♀ *Head.* Frons and face with dense whitish tomentum, leaving a bare, shining black area round ocellar tubercle, and a large, ovate area occupied by moustache. Ocellar bristles, and those of sparse moustache, yellow. Antennae of type A (Text-fig. 4) black, with yellow hairs. Proboscis and palpi also black with yellow hairs. Occiput covered with grey tomentum, more densely white along eye-margins, and with short pale hairs.

Thorax. Mesonotum shining black, only narrowly tomented at extreme sides, on anterior face, and on flat prescutellar area ; clothed with yellow hairs that are moderately dense, but uniformly shorter than those of *semitestacea.* Scutellum similar, i.e. shining black with yellow hairs and a narrowly tomented rim. Pleura with grey tomentum, browner on mesopleuron. Hairs fine, yellow, restricted to a patch on mesopleuron and a vertical row in front of halteres.

Abdomen entirely bright orange with yellow tomentum and short yellow hairs. Ovipositor short, shining eighth tergite and lamellae almost concealed (Text-fig. 8).

Legs. Coxae and trochanters black in ground colour, and tomented like pleura. Femora, tibiae and most of basitarsi orange ; tips of basitarsi and other tarsomeres black. Hairs and bristles yellow.

Wings dark brown, becoming paler towards tip. Halteres large, orange.

Length of body 5 mm. ; of wing 5 mm.

♂. Closely similar ; genitalia as in Text-fig. 7.

Holotype in U.S. National Museum, Washington.

Distribution. Type locality is Moçambique : Lourenço Marques. In B.M. (N.H.) 1 ♀, S. Rhodesia : Sawmills, 12.iv.1920 (?collector). In South African Institute for Medical Research 4 ♂, 3 ♀, Transvaal : Rootberg & Letalel (*F. Zumpt*).

Rhipidocephala obscurata sp. n.

One of a small number of species in which the usual clothing hairs of the mesonotum are lacking. In *obscurata* the stripes, too, are lacking, and the mesonotum is black-brown with lighter brown rim. It thus resembles *morio* Hermann in general coloration, but is distinguished by the absence of the mesonotal hairs, and by the genitalia.

♂ *Head.* Frons and face black-brown in ground colour, but entirely covered with brown tomentum except for the facial bare area. In this species the facial bare area is above the moustache, which is reduced to a few yellow bristles on the epistoma (cf. discussion of *Holcocephala*, above). Antennae, however, of *Rhipidocephala* type D (Text-fig. 4), black, basal segments with pale hairs. Proboscis and palpi black with yellow hairs. Occiput brown with white rim on eye-margin, and with short, fine, yellow hairs.

Thorax. Mesonotum entirely covered with dense tomentum, even over humeri ; more blackish anteriorly, more brownish laterally and posteriorly. Hairs few and sparse, recumbent, and hardly visible in side view. Pleura similar, heavily tomented, more blackish on dorsal half, more greyish ventrally. Hairs yellow.

Abdomen. General colour ashy. Dark chocolate-brown at sides, more yellowish in membranous areas dorsally. Each segment with a large area of grey tomentum laterally, but first and most of second segments black-brown. ♂ genitalia as in Text-fig. 9, shining black-brown.

Legs black, with yellow clothing hairs and yellow bristles.

Wings uniformly black-brown. Halteres yellow.

Length of body 5 mm. ; of wing 5 mm.

♀ closely similar. Eighth sternite is mostly shining, and forms a short, stout ovipositor.

Holotype ♂. S. Rhodesia : Chavavu area, 7 m. E. of Kariba, 6.ii.1956 (*R. Goodier*). In B.M. (N.H.).

Paratypes: S. RHODESIA: Kariba Area, Chavavu area, 6.ii.1956, 19.i.1956, 2 ♀; Kessesse R. area, 20.i.1956, 1 ♂, 1 ♀ (all *R. Goodier*).

FIGS. 6–13. Genitalia of *Rhipidocephala*; those with a characteristic external appearance are drawn *in situ*, those requiring dissection are drawn from slide-mounts: 6, *semitestacea* ♂; 7, *mirabilis* ♂; 8, *mirabilis* ♀; 9, *obscurata* ♂; 10, *divestita*, ♂; 11, 12, *tigrina* ♂; 13, *inconspicua* ♂.

Rhipidocephala divestita sp. n.

Another species with only insignificant bristles and hairs on the mesonotum, *divestita* is distinguished from *obscurata* sp. n. by the distinct dark pattern of the mesonotum and by the male genitalia.

♂ *Head.* Frons and face with yellowish white tomentum ; a brownish bar through bases of antennae, and ocellar tubercle with brown tomentum. Face has a small, transverse bare area lying dorsal to moustache, which is reduced to a few yellow bristles close to epistoma. Antennae of type D (Text-fig. 4) black, basal segments with yellow hairs. Proboscis and palpi black with yellow hairs. Occiput with white tomentum and white hairs.

Thorax. Mesonotum light grey, with a distinct black-brown pattern confined to anterior half ; a broad median stripe, divided anteriorly, tapering posteriorly, and on each side of it a triangular patch. Hairs reduced to a few posteriorly and on scutellum, which is uniformly grey. Pleura black on dorsal half, grey ventrally.

Abdomen ashy grey like that of *obscurata.* Only middle, membranous areas of tergites a little reddish. Base of each segment black-brown, but from third segment onwards with a pair of large, grey lateral spots on each segment. Hairs short, yellow. Genitalia as in Text-fig. 10.

Legs black-brown, with yellow hairs and bristles.

Wings black. Halteres orange.

Length of body 5 mm. ; of wing 5 mm.

♀ similar. Ovipositor as in *obscurata,* short, stout, with eighth segment shining through thin tomentum.

Holotype ♂. ZANZIBAR : Mazi Maja, x–xii.1924 (*H. J. Snell*). In B.M. (N.H.).

Paratypes : ZANZIBAR : Mazi Maja, x–xii.1924 (*H. J. Snell*), 1 ♂, 9 ♀.

Rhipidocephala tigrina (Janssens)

Paroxynoton tigrinum Janssens, 1953, *Bull. Inst. r. Sci. nat. Belg.* **29** : 12, **comb. n.**

This species was originally described as type of a new genus, *Paroxynoton,* by comparison with the same author's earlier genus *Oxynoton.* Both genera are represented in the British Museum collection, *P. tigrinum* by paratypes. The specimens show that, while *Oxynoton francoisi* Janssens is a very distinctive fly with a curiously hump-backed mesonotum, *P. tigrinum* falls well within the concept of *Rhipidocephala* as used in the present study. It is not even a particularly distinctive species of *Rhipidocephala,* but is separated from allied species by the combination of characters shown in the key.

♂ *Head.* Face and frons shining black with ashy tomentum, mostly grey, but with a brown band through bases of antennae, and ocellar tubercle with brown tomentum. Bare, shining black area of face lunate, lying entirely dorsal to moustache, which is rather reduced, and lies near epistoma ; bristles yellow. Antennae of type D (Text-fig. 4) but with second segment of style thinner and more pointed, and with longer, sparser hairs in apical half ; hairs of two basal segments yellow. Proboscis and palpi black with yellow hairs and bristles. Occiput with whitish tomentum and pale yellow hairs.

Thorax. Mesonotum with dense grey tomentum, more whitish laterally and posteriorly, and with prominent pattern of broad black-brown stripe, which ends abruptly posteriorly, flanked by two large, triangular spots. Pale hairs short anteriorly, but long and dense posteriorly. Pleura grey, without any obviously darker areas ; fine hairs and bristles yellow.

Abdomen. Dorsum extensively dull orange, not only membranous area but lateral tergites as well ; sternites more blackish. Hairs and bristles yellow. Male genitalia orange, large and prominent, in dorsal view forming an arch (Text-figs. 11, 12).

Legs. Femora black, except for narrowly red bases ; tibiae and basitarsi dull reddish, other tarsomeres more blackish. Bristles and clothing hairs yellow, latter denser than in many *Rhipidocephala.*

Wings dark brown, not appreciably lighter towards apex. Costal cell distinctly broadened.

♀ similar. Ovipositor short and inconspicuous.

Holotype in Inst. R. Sci. nat., Bruxelles, Belgium.

Distribution. Known only from URUNDI : Gihanga & Bubanza.

Rhipidocephala inconspicua sp. n.

Very similar to *tigrina,* including the structure of the antennae but separated by the dark brown postscutellum and by the male genitalia. The existence of this species supports the view that *Paroxynoton* Janssens is not generically distinct from *Rhipidocephala.*

♂ *Head.* Frons and face with yellowish grey tomentum, whiter on face, browner on frons ; ocellar tubercle with dark brown tomentum. Bare facial area shining black, ovoid, immediately dorsad of a rather sparse yellow moustache. Antennae as described for *tigrina,* type D (Text-fig. 4), with second segment of style elongate and finely pointed, with longer black bristles in apical half. Hairs of basal two segments pale. Hairs of basal two segments pale. Palpi and proboscis black with yellow hairs and bristles. Occiput uniformly covered with white tomentum and pale yellow hairs.

Thorax. Tomentum of mesonotum extensively grey posteriorly and laterally. Median stripe very broad anteriorly, indistinctly merging with the two large spots, but ending abruptly level with bases of wings. Erect hairs rather sparse on dark areas, but dense and very pale on grey posterior area and on grey scutellum. Pleura with dense ashy grey tomentum, darker brown round anterior spiracle and margins of mespleuron. Hairs yellow. Postscutellum dark brown like base of abdomen, and contrasting with grey pleura.

Abdomen whitish on membranous areas of tergites ; sclerotized tergites covered with ashy grey tomentum, dark brown on first two tergites, and narrowly at bases of others. Hairs pale yellow. Genitalia as in Text-fig. 13.

Legs. Femora black, tibiae and tarsi orange, other tarsomeres darker. Clothing hairs and bristles yellow.

Wings dark brown, no paler area. Halteres yellow.

Length of body 6 mm. ; of wing 6 mm.

♀ similar. Eighth segment forming a short ovipositor, but still covered with tomentum.

Holotype ♂. KENYA : Gasi-Mombasa, v.1944 (*E. Opiko*). In B.M. (N.H.).

Paratypes : KENYA : Gasi-Mombasa, v.1944 (*E. Opiko*), 1 ♀ ; Gasi, xi.1927 (*van Someren*), 1 ♂, 1 ♀ ; Diana Beach, vii.1951 (*N. L. H. Kraus*), 1 ♀. TANGANYIKA : Tanga, vi.1932 (*Miss A. Mackie & J. Ogilvie*), 2 ♂, 3 ♀.

Rhipidocephala distincta sp. n.

The thoracic pattern sets this species apart from any other. Besides the usual large grey area posteriorly, the anterior third of the mesonotum is also entirely yellowish grey, reducing the dark pattern to a transverse row of three spots.

♂ *Head.* Tomentum yellowish grey : ocellar tubercle, and a transverse band immediately above antennae, dark brown. Ocellar tubercle with fine yellow hairs, which also appear on vertex and postvertex, but not on sides of frons. Face with yellowish grey tomentum and a lunate, bare, shining black area above moustache, which is about half height of face, and has

rather scattered yellow bristles. Antennae of type A (Text-fig. 4), black, basal segments with yellow hairs. Palpi and proboscis black with yellow hairs and bristles. Occiput entirely covered with white tomentum and pale yellowish hairs.

Thorax. Mesonotum strongly arched, almost semicircular in outline, covered with dense yellowish grey tomentum, which is extensive anteriorly as well as posteriorly: dull brown stripes reduced to a transverse row of three spots. Fine, pale yellowish hairs long and erect, over entire mesonotum and scutellum. Pleura entirely covered with yellowish grey tomentum and pale yellowish hairs, except for dark brown colour in notopleural area and on posterior spiracle.

Abdomen dorsally with membranous area indicated, but less extensive than shown in Text-fig. 5. Entire dorsum light brown, laterally with dense tufts of long, fine yellow hairs; ventrally with more greyish tomentum and fine yellow hairs. Male genitalia (Text-fig. 14) orange, exserted, but not very prominent, claspers with a characteristic row of strong bristles.

Legs reddish yellow, fore and middle femora indistinctly darkened, especially anteriorly. Hairs and bristles entirely yellow, clothing hairs dense and relatively long.

Wings uniformly brown, costal cell broadened.

Length of body 5 mm.; of wing 5 mm.

♀ similar. Ovipositor short, stout, simple.

Holotype ♂. Moçambique: Inhambane, ii.1924 (*R. F. Lawrence*). In B.M. (N.H.).

Paratypes: Moçambique: Inhambane, ii.1924 (*R. F. Lawrence*), 5 ♂, 2 ♀.

Rhipidocephala fulva sp. n.

Distinguished from *flavipes* and other yellow-legged species by having also a tawny thorax and abdomen, with abundant long, yellow hairs.

♂ *Head.* Frons and face covered with dark, yellow-brown tomentum, ocellar tubercle and sides of vertex with rather short, yellow-brown hairs. Face with a large, ovoid, bare spot, shining brown, and with a rather sparse moustache of well-separated yellow-brown hairs. Antennae of type D (Text-fig. 4) black, with yellow hairs on first two segments. Proboscis and palpi with yellow hairs on a black ground. Occiput with yellow-brown tomentum and short yellow hairs.

Thorax. Mesonotum yellowish grey, with the usual dark brown pattern of median stripe and two spots, all obscured by dense, long, tawny hairs. Pleura yellowish grey with few yellowish hairs; notopleural region and two spiracles dark brown.

Abdomen extensively membranous dorsally, sclerotized areas also clear yellow-brown, with yellow hairs. Venter similar. Male genitalia also yellow, small and inconspicuous (Text-fig. 17).

Legs clear yellow, tarsomeres becoming progressively darker. Hairs and bristles yellow, bristles of femora and tibiae unusually long and strong.

Wings uniformly brown, costal cell rather expanded. Halteres yellow.

Length of body 6 mm.; of wing 6 mm.

♀ closely similar. Ovipositor scarcely exists, but lamellae protrude from a shining eighth segment.

Holotype ♂. Cape Province: Kruger National Park, 29.xi.54 (*C. H. Andrewes*). In B.M. (N.H.).

Paratypes: Cape Province: Kruger National Park, 29.xi.1954 (*C. H. Andrewes*), Moçambique: Inhambane, i.1924 (*R.F.Lawrence*), 1 ♀. Transvaal: Potgietersrust, 6.xii.1953 (*F. Zumpt*), 1 ♂. Bechuanaland: nr. Nata, xii.1954 (*F. Zumpt*), 1 ♀. S. Rhodesia: Sawmills, 31.xii.21 (?collector), 1 ♂, 1 ♀.

Rhipidocephala flavipes Hermann

Rhipidocephala flavipes Hermann, 1926, *Verh. zool-bot. Ges. Wien* **74** : 177.

Descriptions made from the syntypes in the Naturhistorisches Museum, Vienna.

Conspicuous yellow-brown male genitalia, epandrium divided into two rolled and leaf-like upper forceps, with a large apical notch. Legs with only femora black, tibiae and some tarsal segments red.

♂ *Head.* Face and frons covered with dense yellowish white tomentum, leaving bare and shining black a semicircular area in middle of face to which pale yellow moustache is confined. Basal antennal segments dull black (Ant. III broken off), with pale yellow hairs. Proboscis and palpi black with yellow hairs. Beard and occipital hairs all pale yellow.

Thorax. Mesonotum with long, dense, pale yellow hairs. Tomentum dull greyish, stripes distinct, median stripe broad, complete anteriorly, stopping before reaching scutellum. Pleura with uniformly greyish tomentum and pale yellowish hairs.

Abdomen. Tergites and sternites covered with dense grey tomentum, only hind margins of posterior segments a little brownish. Hairs long, pale yellowish. Genitalia yellow-brown, translucent (Text-figs. 15, 16).

Legs. Coxae black with greyish tomentum ; trochanters shining black. Femora shining black with orange knees, and a little more orange colour on hind femora. Fore and middle tibiae dull reddish, black ventrally ; tarsi black ; hind tibiae and basitarsi orange, rest of hind tarsus black. All legs with yellowish bristles, and covered with recumbent yellow hairs.

Wings rather broad, uniformly dark brown. Halteres pale yellow.

Length of body 5 mm. ; of wing 5 mm.

♀ similar except for rather more orange on all femora. Third antennal segment awl-shaped, with style and microsegment more than half its total length. Female terminalia also orange, short, downturned.

Syntypes 1 ♂, 1 ♀ in Vienna Museum, lent to me for study. The labelling and probable origin of these specimens has been discussed earlier in this paper.

Distribution. E. Cape Province : Kathberg, 4,000 ft., 1–15.i.1933 (*R. E. Turner*), 2 ♂, 1 ♀ agree in genitalia, and in other respects except for variations in leg colour. Transvaal : Skukuze, 23.xi.1959 (*F. Zumpt*).

Rhipidocephala umbripennis (Loew)

Discocephala umbripennis Loew, 1858, *Öfv. Kongl. Vet.-Akad. Forhandl.* **14** : 351 ; 1860, *Dipt.-fauna. Südafr.* **1** : 97.

The combination of colour-characters given in the key distinguish this species from any other.

♂ *Head.* Frons and face with greyish white tomentum, only slightly darker on frons ; ocellar tubercle slightly brownish. Hairs mainly pale yellowish, at sides of frons as well as on ocellar tubercle, but rather sparse. Moustache of pale yellowish hairs, extending almost up to antennae with a large, ovoid, bare black spot in its dorsal part. Antennae of type D (Text-fig. 4), basal segments with pale yellowish hairs. Proboscis and palpi black with pale yellowish hairs. Occiput whitish with very pale yellowish hairs.

Thorax. Mesonotum yellowish grey with median dark brown stripe extending almost to scutellum, and with lateral brown areas. Scutellum entirely brownish grey. Hairs erect, moderately long, pale yellowish. Pleura ashy grey, indistinctly brownish in part, hairs and bristles pale yellowish.

Abdomen dorsally with large, membranous areas as in Text-fig. 5 ; brown in colour ; lateral sclerites ashy grey, with rather long, pale yellow hairs. Venter dark grey with rather shorter pale yellow hairs. Genitalia bright orange, conspicuous ; upper forceps curled, leaf-like (Text-fig. 19).

FIGS. 14–22. Genitalia of *Rhipidocephala* : 14, *distincta* ♂ ; 15, 16, *flavipes* ♂ ; 17, *fulva* ♂ ; 18, *umbripennis* ♀ ; 19, *umbripennis* ♂ ; 20, *tenera* ♂ ; 21, *tenera* ♀ ; 22, *zumpti* ♂.

Legs. Coxae like pleura. Trochanters and femora shining black except for knees, which are red, very narrowly so on fore and middle femora, more broadly so on hind femora. Tibiae dull reddish, a little darker apically. Tarsi black except for base of basitarsus, which is red, more extensively so on hind basitarsus. All clothing hairs and bristles yellow.

Wings broad, with broadened costal cell. Dark brown. Halteres orange.

Length of body 6 mm. ; of wing 6 mm.

♀ similar. Ovipositor short, stout, orange (Text-fig. 18).

Holotype in Riksmuseet, Stockholm.

Distribution. Cape Province. Natal.

Rhipidocephala tenera sp. n.

Closely similar in colour to *umbripennis*, but distinguished in both sexes by the very different genitalia (Text-figs. 18–21).

♂ *Head*. Frons and face with dull bronze tomentum, only ocellar tubercle and small areas near antennae darker brown. Hairs yellow, those on ocellar tubercle and adjoining areas of vertex rather short. Moustache yellow, extending about half height of face, and with a transverse, shining black area above it. Antennae of type C (text-fig. 4), black, basal segments with pale hairs. Proboscis and palpi black with yellow hairs. Occiput yellowish grey with pale yellow hairs.

Thorax. Mesonotum yellowish grey with usual pattern of dark brown stripes. Median stripe short, lateral stripes distinct. Hairs shorter than in *umbripennis*, yellow. Pleura grey, mesopleuron brown, hairs and bristles yellow.

Abdomen dorsally a large membranous area (Text-fig. 5) is yellow. Sclerites also yellow anteriorly, especially second segment, but become obscured by greyish tomentum on other segments. Venter yellowish grey. Hairs short, yellow. Genitalia bright orange, but of a different form from those of *umbripennis* (Text-figs. 19, 20).

Legs. Coxae like pleura. Femora shining black, red tips a little more extensive than in *umbripennis*. Tibiae and tarsi also more extensively red than in *umbripennis*, only tips of tarsi darker. Hairs and bristles orange.

Wings broad, costal cell expanded, uniformly dark brown. Halteres orange.

Length of body 5 mm. ; of wing 5 mm.

♀ similar. Genitalia orange, shape as in Text-fig. 21.

Holotype ♂. Transvaal : Skukuze, 23.xi.1959 (*F. Zumpt*). In South African Institute for Medical Research, Johannesburg.

Paratypes : Transvaal : Skukuze, 23.xi.1959 (*F. Zumpt*), 3 ♂, 4 ♀.

Rhipidocephala zumpti sp. n.

Unique in the genus because of its ashy grey mesonotum, in which the stripes, though faintly visible, are almost completely obscured. Legs black but moustache white. The strongly curved male genitalia (Text-fig. 22) are also unique.

♂ *Head*. Face and frons covered with white tomentum, only a little more brownish near antennal bases and on ocellar tubercle. Hairs of tubercle and sides of vertex short, yellow. Face with a large, semi-circular bare area, shining black, in its upper half ; moustache pale yellow, thin and straggly but extending over black area as well as over tomented area of epistoma. Antennae type D (Text-fig. 4), black, basal segments with yellow hairs. Proboscis and palpi black with yellow hairs. Occiput ashy grey with pale yellow hairs.

Thorax with dense light grey tomentum, and only the merest indication of darker stripes ; pale yellow bristles dense, long, erect, curved. Pleura grey, mesopleuron more brownish, hairs pale yellowish.

Abdomen dorsally membranous (Text-fig. 5), dull orange ; lateral and ventral sclerites grey-brown, with short, pale yellowish hairs. Male genitalia orange, large, strongly curved (Text-fig. 22).

Legs black, narrowly red at knees, but on tibiae, not on femora. Clothing hairs and bristles pale yellow.

Wings moderately broad, a little expanded in costal cell, uniformly dark brown. Halteres orange.

Length of body 6 mm. ; of wing 6 mm.

♀. Not yet known.

Holotype ♂. TRANSVAAL : Sabie, i.1952 (*F. Zumpt*). In South African Institute for Medical Research, Johannesburg.

Rhipidocephala caffra (Macquart)

Discocephala caffra Macquart, 1846, *Dipt. exot. Suppl.* **1** : 70 ; Loew, 1860 *Dipt.-fauna. Südafr.* **1** : 97.

Rhipidocephala caffra (Loew) [*err. pro* Macquart] Hermann, 1926, *Verh. zool.-bot. Ges. Wien* **74** : 178.

This is perhaps the most distinctive species of *Rhipidocephala*, recognized not only by its dark wings and entirely black legs—which it shares with several other species, including *umbripennis* Loew—but also by the form of the antennae (Text-fig. 4B). The second microsegment is relatively long and hairy, and bears a dorsal spine. Some authors (e.g. Hull, 1962 : 64) have attempted to make this type of antenna diagnostic of the genus *Rhipidocephala*, but it is not possible to do so.

♂ *Head.* Tomentum of frons velvety dark brown, with a yellow area on each side of ocellar tubercle, and a median black line. A tuft of fine yellow hairs on each side of vertex. Ocellar tubercle black, with numerous long yellowish hairs. Facial tomentum more greyish, with moustache of black-brown hairs occupying a large, cordiform, bare black area. Proboscis and palpi black with black-brown hairs. Occiput with white tomentum on eye-margin, more brown posteriorly, where hairs are yellowish, merging ventrally into a yellowish white beared. Antennae (Text-fig. 4) of type B, black, with hairs black and yellowish, only first segment perhaps a little reddish ; second microsegment relatively long, with dorsal notch and spine.

Thorax ashy greyish brown with only indistinct traces of two longitudinal stripes and of dark areas above wings ; humeri, postalar calli and scutellum of same greyish coloration. Hairs of mesonotum and scutellum long, fine. Pleura with ashy grey tomentum, and yellow hairs ; mesopleuron with numerous hairs, both dorsally and posteriorly ; metapleuron with a vertical band of strong yellow bristles.

Abdomen very incompletely sclerotized on mid-dorsal area ; transverse bridges at base of first segment and middle of second (Text-fig. 5). Membranous areas brown, sclerotized areas dull blackish, with narrow yellowish posterior margins on posterior segments. Long yellowish hairs. Venter similar, but entirely sclerotized. Male genitalia orange, often more or less concealed. (Text-figs. 23–25).

Legs black, with yellow clothing hairs and bristles.

Wings dark brown to the naked eye, sometimes paler by transmitted light, but only indistinctly paler apically.

Length of body 7 mm. ; of wing 7 mm.

♀ closely similar ; no ovipositor, only quadrate lamellae visible. Sometimes, especially in males, the hairs of the head and mesonotum may be black-brown, or even blackish.

Holotype in Muséum National d'Histoire Naturelle, Paris.

Distribution. Cape Province. Natal. Portuguese East Africa.

Rhipidocephala morio Hermann

Rhipidocephala morio Hermann, 1926, *Verh. zool.-bot. Ges. Wien* **74** : 180.

One of two species with dull, dark brown thorax, and hardly any trace of stripes, *morio* is distinguished from *caffra* by the more strongly convex thorax and the shorter antennae. *R. caffra* is a S. African species, and *R. morio* is a species of the southern Sahara, from Abyssinia (type locality) westwards across to the Gambia. All the western specimens have the bristles paler than those described by Hermann, but a female from the Katanga has dark bristles.

♂ *Head.* Frons and face strongly contrasting ; frons and ocellar tubercle dark brown, with yellow hairs on tubercle and on sides of vertex ; face with whitish tomentum, leaving an elliptical, bare, black patch above sparse yellow bristles of moustache. Antennae of type B (Text-fig. 4), black basal segments with yellow hairs [black according to Hermann] ; proboscis and palpi black with yellow hairs. Occiput grey along eye-margins, brown in centre, with rather inconspicuous pale yellow hairs.

Thorax. Mesonotum does have usual pattern of dark stripe flanked by two dark spots, but this is obscured, usually almost completely, by dark brown tomentum ; sometimes pattern moderately visible ; lateral and posterior margins, including scutellum brown. Hairs dense, long, erect, yellow-brown. Pleura dark brown, hairs yellow-brown.

Abdomen dorsally membranous (Text-fig. 5), whitish ; sclerotized areas dark chocolate-brown, with grey hind margins and large grey lateral spots. Venter grey. Hairs pale yellowish, longer laterally and ventrally. Male genitalia black (Text-fig. 26).

Legs black with yellow clothing hairs and long yellow bristles.

Wings only moderately broad and slightly expanded in costal cell. Uniformly dark. Halteres orange.

Length of body 5 mm. ; of wing 5 mm.

♀ quite similar. Ovipositor short, black. (Text-fig. 28).

Holotype ? in Vienna. It was not in the material kindly lent to me by Prof. Max Beier. Hermann's description agrees with the specimens described above, except that he consistently mentions darker, browner hairs.

Distribution. Type locality is Abyssinia : Harar. Specimens seen by me from S. Nigeria, Ghana & Gambia. A single ♀ in the Musée R. de l'Afrique centrale, Tervuren is from Katanga : Mulungivishi, i.1931 (*G. F. de Witte*), and has dark hairs as described by Hermann.

Rhipidocephala signata (Hermann)

Holcocephala (*Discocephala*) *signata* Hermann, 1907, *Z. syst. Hymenopt. Dipterol.* **7** : 11.

A dark brown species with black legs, distinguished by its inconspicuous yellow male genitalia, and by the thoracic pattern, with a short, detached, black-brown median stripe just before scutellum.

♂ *Head.* With dense tomentum, more brownish on frons, more greyish on face. Facial bare area kidney-shaped, transverse, extended towards mouth margin by a fine line. Face and frons rather bare of soft hairs ; bristles of ocellar tubercle and of moustache stiff, bristly, and of a

black-brown, shifting colour, which Hermann calls *pechbraun*. Antennae black : second segment of style long and with a dorsal style (type B, Text-fig. 4). Palpi and proboscis black, with *pechbraun* hairs. Occiput white on eye-margins, brown elsewhere, with black hairs.

Thorax. Mesonotum brownish grey with distinct dark brown pattern ; a pair of parallel median stripes terminate just behind suture, and are succeeded by a single, short, median stripe reaching about to scutellum ; laterally three spots, one near humeral lobe, and other two centred on transverse suture. Scutellum grey. Hairs dark brown, erect, fine, no strong bristles. Pleura mainly grey, but triangular area of more yellow-brown tomentum extends from base of fore coxa to include entire mesopleuron. Hairs and bristles long, yellow.

Abdomen. Dorsum extensively excavated, with the usual transverse bar across the second segment ; sclerotized areas yellowish grey, with whitish segmentations and yellow hairs and bristles ; venter similar. Male genitalia yellow, inconspicuous, almost concealed beneath seventh tergite, which is also yellow.

Legs shining black, covered with yellow hairs and bristles.

Wings blackish, a little paler apically, and with paler centres in a few of the cells. Halteres yellow.

Length of body 6 mm. ; of wing 5 mm.

♀ similar. Ovipositor also yellow, short, and mostly concealed beneath a yellow seventh segment.

Holotype ♂ in Naturhistorisches Museum, Vienna, kindly lent to me by Prof. Max Beier.

Distribution. Cape Province : Willowmore (*Dr. Brauns*), ♂ holotype, 1 ♀ paratype in Vienna. A series of specimens in the British Museum, determined as *signata* Hermann by Engel, have quite different, very prominent, male genitalia, as well as differences in thoracic pattern, and are described elsewhere in this paper as *engeli* sp. n.

Rhipidocephala congoiensis sp. n.

A widespread species of the Congo Basin, distinguished from *signata* Hermann and *scutata* sp. n. by the different pattern of thoracic stripes ; characteristic of *congoiensis* is the extension of the lateral stripes beyond the median stripe.

♂ *Head*. Frons and face with uniform dull golden tomentum, ocellar tubercle brown. Hairs of tubercle yellow ; no hairs on frons proper. Face with a large, ovoid, bare, shining black spot, placed dorsally to a sparse yellow moustache. Antennae of type D (Text-fig. 4), but final segment tapering more, and with longer black hairs ; two basal segments with yellow hairs. Proboscis and palpi black with yellow hairs. Occiput grey with yellow hairs.

Thorax. Mesonotum grey with very distinct brown pattern : median stripe cut short before reaching scutellum, but lateral stripes unusually long, prolonged by prescutellar spots. Hairs erect, pale yellow. Pleura ashy grey and brown, brown especially on mesopleuron ; hairs pale yellow.

Abdomen. Dorsum membranous (Text-fig. 5), orange. Sclerites brown with orange hind margins, first two more generally orange. Hairs golden yellow. Venter brown with brassy tomentum and golden hairs. Male genitalia (Text-figs. 29, 30) yellow, fairly prominent.

Legs all black except very narrowly at knees, covered with dense yellow hairs and long yellow bristles.

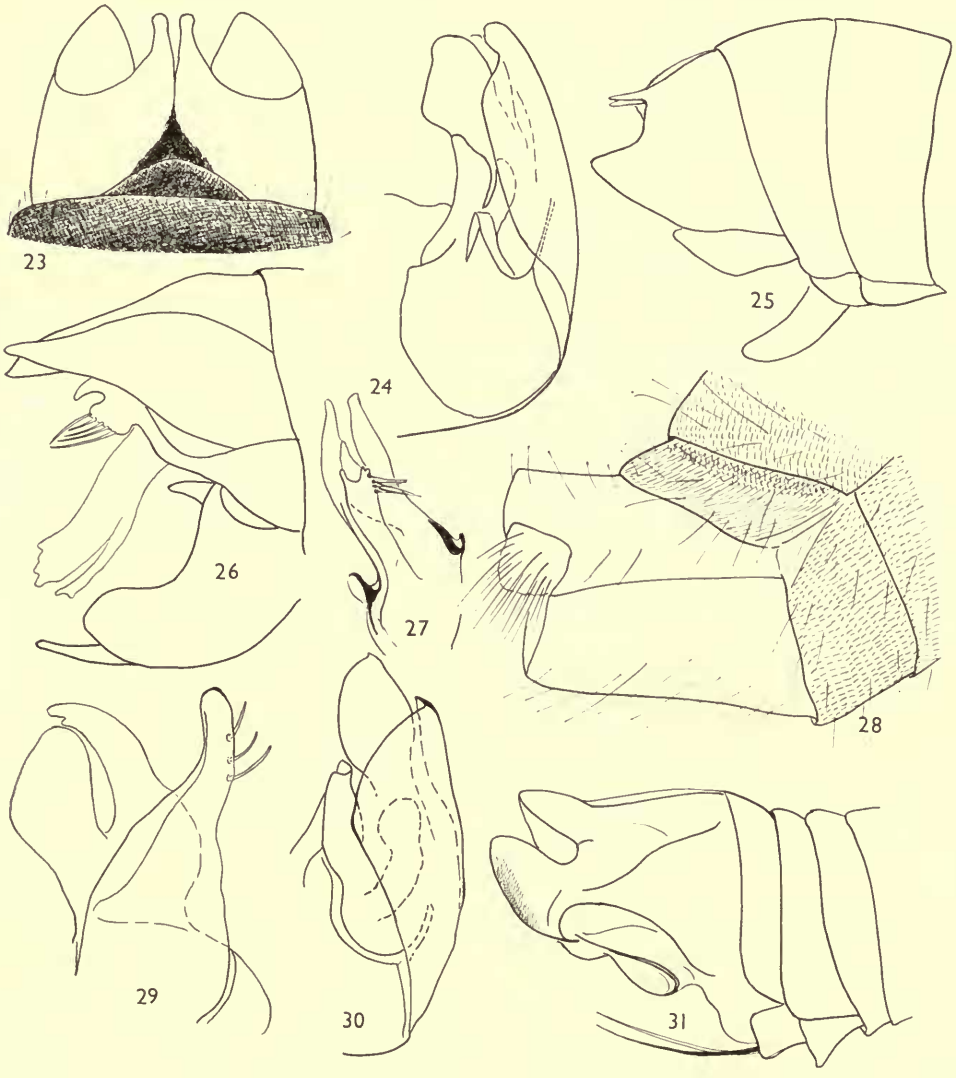
Wings only moderately broad, and costal cell not appreciably expanded, uniformly dark brown. Halteres orange.

Length of body 5 mm. ; of wing 5 mm.

♀ similar. Genitalia compact, orange.

Holotype ♂. Congo : Kasai, 1928 (*Dr. Walker*) in Musée R. de l'Afrique Centrale, Tervuren, Belgium.

Paratypes. Congo : Kasai, 1928 (*Dr. Walker*), 3 ♂, 3 ♀; Dolo, xi.1912 (*F. Chaltin*), 4 ♂, 1 ♀; Lomami, Katompe, 12.xiii.1923 (*Dr. M. Bequaert*), 2 ♀.



Figs. 23–31. Genitalia of *Rhipidocephala* : 23–25, *caffra* ♂; 26, *morio* ♂; 27, *scutata* ♂; 28, *morio* ♀; 29, 30, *congoiensis* ♂; 31, *engeli* ♂.

Rhipidocephala scutata sp. n.

Distinguished from *congoiensis* sp. n. by the thoracic pattern, in which the stripes are heavily marked, and coalesced in the anterior half of the thorax; posterior half grey, with long yellow hairs. Frons and face sharply differentiated in colour.

♂ *Head.* Frons with yellow and brown tomentum, ocellar tubercle dark brown; hairs short, yellow, confined to tubercle. Face with brassy yellow tomentum and an oval, bare spot dorsal to sparse yellow moustache. Antennae of type D (Text-fig. 4), black, basal segments with yellow hairs. Occiput grey on eye-margins, brown centrally, with yellow hairs.

Thorax. Mesonotum densely covered with tomentum, which is pale yellow laterally and posteriorly, including scutellum, stripes dark brown, heavily marked, tending to coalesce. Hairs long, especially posteriorly, yellow. Pleura yellowish grey, with extensive dark brown patches, especially on sutures and on anterior of mesopleuron. Sparse hairs yellow.

Abdomen. Dorsum extensively membranous (Text-fig. 5), dull orange; sclerites ashy grey with yellow hairs. Venter blackish, with light yellow hairs. Genitalia black, protruding, but rather small, clasper with its spines well displayed (Text-fig. 27).

Legs black with yellow hairs and bristles.

Wings dark brown, moderately broadened, costal cell a little expanded.

Length of body 5 mm.; of wing 5 mm.

♀ similar. Ovipositor formed from a stout eighth segment, dully shining.

Holotype ♂. Congo: Garamba National Park, 3449, II/gd/4, 8.v.1952 (*De Saeger*). In Institut des Parcs Nationaux du Congo, Brussels.

Paratypes: Congo: Parc National du Garamba, Mission H. De Saeger, 3449, II/gd/4, 8.v.1952 (*De Saeger*), 1 ♂, 1 ♀; 1887, II/gd/7, 8.vi.1951 (*De Saeger*), 1 ♀; 1588, II/hc/4, 20.iv.1961 (*Verschuren*), 10 ♂, 4 ♀; 1824, II/fd/27, 28.v.1951 (*De Saeger*), 1 ♂; 469, I/a/1, 1.v.1950 (*Demoulin*), 1 ♀; 3678, Ndelele, 4, 18.vi.52 (*De Staeger*), 1 ♂, 2 ♀; 3323, Pidigala, 23.iv.1952 (*De Saeger*), 2 ♂, in Institut des Parcs Nationaux du Congo, Brussels.

Kivu: Uvira, xi.1922 (*Ch. Seydel*), 3 ♂, 4 ♀; 16–23.iii.1953 (*P. Basilewsky*), 2 ♂, 3 ♀, in Coll. Musée de l'Afrique centrale, Tervuren, Belgium.

Rhipidocephala engeli sp. n.

This is a very distinctive species, with characteristic male genitalia (Text-fig. 31). The series in the British Museum was previously identified by the late Dr. E. O. Engel as *signata* Hermann, but the material lent to me from Vienna shows it to be quite distinct.

A grey species with light brown thoracic markings, concentrated especially posteriorly (including scutellum); genitalia in both sexes yellow, especially prominent in male (Text-fig. 31).

♂ *Head.* Frons and face with grey tomentum and a bar of dark brown tomentum through bases of antennae. A large, ovoid, shining bare spot underlies most of moustache, which reaches nearly to antennae. Hairs of frons and of moustache pale yellow. Antennae of type D (Text-fig. 4), black, basal segments with yellow hairs. Palpi and proboscis black, with pale yellow hairs. Occiput white with pale yellow hairs.

Thorax. Mesonotum densely tomented, mainly dark brown, including scutellum: in well preserved specimens three stripes can be seen, and anterior third of mesonotum, as well as lateral

margins, grey : but in other specimens entire mesonotum dull blackish brown. Hairs pale yellowish, erect, rather long. Pleura grey, mesopleuron partly brownish, hairs and bristles pale yellowish.

Abdomen dorsally membranous (Text-fig. 5), dark brown, sclerotized areas with grey tomentum and long, pale hairs ; venter similar ; both dorsally and ventrally hind margins of segments indistinctly yellowish. Male genitalia bright orange, relatively huge, about half as long as abdomen, with prominent lobes on upper forceps (epandrium) (Text-fig. 31).

Legs black with yellow clothing hairs and yellow bristles.

Wings dark brown, expanded, costal cell broadened.

Length of body 5 mm. ; of wing 5 mm.

♀ similar. Eighth segment stout, yellow, forming short ovipositor.

Holotype ♂. NATAL : Weenen (*H. P. Thomasett*). In B.M. (N.H.).

Paratypes : NATAL : Weenen (*H. P. Thomasett*), 6 ♂, 13 ♀.

Rhipidocephala fimbriata sp. n.

A distinctive species, with coarse yellow hairs abundant on head and thorax ; a shining black abdomen with very prominent lateral fringes of yellow hairs ; black femora and orange tibiae ; and genitalia as shown in Text-figs. 32, 33.

♂ *Head.* Frons and face with grey tomentum. On frons it is denser and allows bare, shining ground colour to show through ; long, yellow hairs abundant laterally and on ocellar tubercle. Face entirely tomented, without any bare area ; moustache of abundant, coarse yellow hairs extends to bases of antennae. Antennae of type C (Text-fig. 4), basal segments with abundant yellow bristles. Palpi and proboscis black, with yellow bristles. Occiput with brownish white tomentum and with abundant, strongly curved, yellow hairs.

Thorax. Mesonotum completely tomented, ashy grey, with usual pattern of black-brown stripes. Scutellum entirely grey. Mesonotum and scutellum covered with very long, erect, curved yellow bristles. Pleura black, covered with brassy yellow tomentum and with bright yellow hairs. Hairs of pronotum also abundantly long, erect, yellow.

Abdomen black, dorsally shining through thin tomentum ; entirely sclerotized, and with no dorsal membranous areas ; dorsally with many short and sparse yellow hairs, but laterally and ventrally with a broad band of yellowish tomentum, covered with long, golden, bristly hairs. Male genitalia bright orange, prominent, upper forceps hoodlike, as shown in Text-fig. 33.

Legs. Coxae like pleura. Femora and tarsi shining black with thin yellow tomentum and yellow hairs and bristles ; tibiae bright orange.

Wings broad, costal cell expanded, entirely dark brown. Halteres orange.

Length of body 8 mm. ; of wing 8 mm.

♀ similar. Large and shining black eighth segment forms a conspicuous ovipositor (Text-fig. 32).

Holotype ♂. CAPE PROVINCE : Wellington, Witte R., 1922 (*Laurence*). In the B.M. (N.H.).

Paratypes : CAPE PROVINCE : 13 m. N.E. of Touws R., 26.x.1938 (*R. E. Turner*), 2 ♀ ; Ceres, xi.1920 (*R. E. Turner*), 1 ♀ ; Montagu, x.1919 (*R. Tucker*), 1 ♀ ; Cape Town, Cape Point, 15–21.xi.1930 (*H. W. Simmonds*).

Rhipidocephala manicata sp. n.

Another species of the group with no facial bare area, and with little or no membranous area dorsally on the abdomen. Easily distinguished from *fimbriata* sp. n. by

the much less conspicuous lateral fringes of the abdomen, and by the male genitalia (Text-figs. 33, 34).

♂ *Head.* Frons and face with dense, yellowish grey tomentum ; only a small black spot on frons is bare and shining ; ocellar tubercle with brown tomentum and brown hairs, brown hairs also laterally on frons. Face without any bare area, and with a moustache of shining brown hairs extending almost to antennae. Antennae of type D (Text-fig. 4) ; hairs of basal segments brown. Palpi and proboscis black with brown hairs. Occiput with white tomentum and dense, silky brown hairs.

Thorax. Mesonotum ashy grey, with rather indistinct brown pattern. Clothing hairs erect, but only moderately long, brown. Pleura with grey tomentum, brown on mesopleuron ; hairs silky, brown, dense all over mesopleuron, on metapleuron, and on prothorax.

Abdomen dorsally with some membranous areas, but less so than usual in this genus ; a transverse area on boundary between first and second segments dull red, and obscure areas on other segments slightly so ; sclerotized areas black, shining through very thin brown tomentum, and with bristly brown clothing hairs covering whole area, longer and stronger laterally, long and fine ventrally. Male genitalia (Text-fig. 34) red and black, prominent.

Legs. Coxae like pleura. Femora shining black, covered with short yellow bristles ; tibiae red with black tips ; tarsi black, hairs and bristles concolorous.

Wings broad, costal cell broadened, brown. Halteres yellow.

Length of body 8 mm. ; of wing 8 mm.

♀. Not yet known.

Holotype ♂. NAMAQUALAND : Springbok (*R. Lightfoot*). In B.M. (N.H.).

Rhipidocephala speciosa sp. n.

Distinguished from *manicata* sp. n. by the blackish rather than ashy appearance, and in particular by having silky yellow hairs, in place of the rather coarse brown hairs of *manicata*.

♂ *Head.* Tomentum of frons and ocellar tubercle dark brown, contrasting sharply with dense yellow tomentum of face. Ocellar tubercle and sides of vertex with yellow hairs ; face entirely without bare area, and with a rather diffuse moustache covering most of facial area. Antennae of type C (Text-fig. 4), black, basal segments with yellowish hairs. Occiput with yellowish white tomentum and dense, curved, yellow hairs.

Thorax. Mesonotum black-brown, with mere traces of longitudinal dark stripes ; humeri, lateral margins and scutellum covered with yellow tomentum. Pleura with uniformly yellowish white tomentum. Mesopleuron and metapleuron each with yellow hairs or bristles.

Abdomen almost completely sclerotized, with merest indications of transverse membranous slit between segments 1 and 2. Black, with very fine yellow hairs which become coarser laterally. Venter with yellowish tomentum and long, silky yellow hairs. Male genitalia yellow, prominent, hood-like (Text-fig. 36).

Legs relatively stout for the genus. Femora, tips of tibiae, and tarsi black ; tibiae yellow except for tips. Hairs and bristles yellow, even on tarsi.

Wings broad, with expanded costal cell, uniformly dark brown, scarcely paler at tip. Halteres yellow.

Length of body 6 mm. ; of wing 6 mm.

♀. Not yet known.

Holotype ♂. CAPE PROVINCE : Paarl, 24.x.1954 (*C. H. Andrewes*). In B.M. (N.H.).

Rhipidocephala doornensis sp. n.

Among those species with entirely tomented face, *doornensis* sp. n. is unusual in having the dorsum of the abdomen fully membranous as in Text–fig. 5. It differs from *speciosa* sp. n. in this, and in having the legs entirely black.

♂ *Head.* Frons and face entirely tomented ; frons a little darker brown than face, which is greyish at sides, more brownish in area of moustache, but without any distinct bare area. Ocellar tubercle and lateral margins of frons with yellow-brown hairs and bristles. Moustache yellow-brown. Antennae of type C (Text-fig. 4), black, first two segments with yellow hairs. Proboscis and palpi black with yellow hairs. Occiput grey with white hairs.

Thorax. Mesonotum black-brown, without pattern ; scutellum with a narrow grey rim. Long, erect, pale hairs yellowish. Pleura with grey tomentum and silvery white hairs on mesopleuron and before halteres.

Abdomen black-brown. Membranous area fully developed as in Text-fig. 5. Sclerites with whitish tomentum and pale yellow hairs. Venter similar, hairs dense. Male genitalia orange (Text-fig. 35).

Legs black with white hairs and yellow bristles.

Wings dark brown, costal cell broadened. Halteres yellow.

Length of body 5 mm. ; of wing 5 mm.

♀ not yet known.

Holotype ♂. Cape Province : Doorn River, 3.xi.1931 (*Miss A. Mackie*). In B.M. (N.H.).

Rhipidocephala quadrifaria Hermann

Rhipidocephala quadrifaria Hermann, 1926, *Verh. zool.-bot. Ges. Wien* **74** : 179.

Distinguished, as Hermann pointed out, by the contrast between the partly shining dark crossband of the frons and the entirely tomented face, where darker tomentum replaces the clear spot that is common in this genus.

♀ *Head* with sharp contrast between frons and upper part of face ; frons partly shining black through thin dark brown tomentum, especially in a transverse band between ocelli and antennae. Face entirely tomented, brown on area covered by moustache, white above and laterally ; no bare spot. Hairs black-brown. Antennae of the form of *umbripennis* (type D, Text-fig. 4), black, with black-brown hairs. Proboscis and palpi black with black-brown hairs. Occiput white on eye-margins, darker elsewhere, with brown hairs.

Thorax. Mesonotum with brown tomentum and only indistinct traces of black-brown pattern ; scutellum dark brown with grey rim. Hairs black. Pleura more greyish, meso- and metapleuron yellowish, hairs yellowish, some rather bristly.

Abdomen black : dorsal membranous areas blackish, only a narrow, transverse slit on margin of segments 1–2 is yellow. Sides with denser grey tomentum and pale yellowish hairs. Ovipositor (Text-fig. 38) fairly long, shining black dorsally on seventh and eighth segments.

Legs shining black with yellow hairs and bristles.

Wings uniformly smoky-brown, only a little darker basally. Halteres yellow.

Length of body 5 mm. ; of wing 5 mm.

♂. Not yet known.

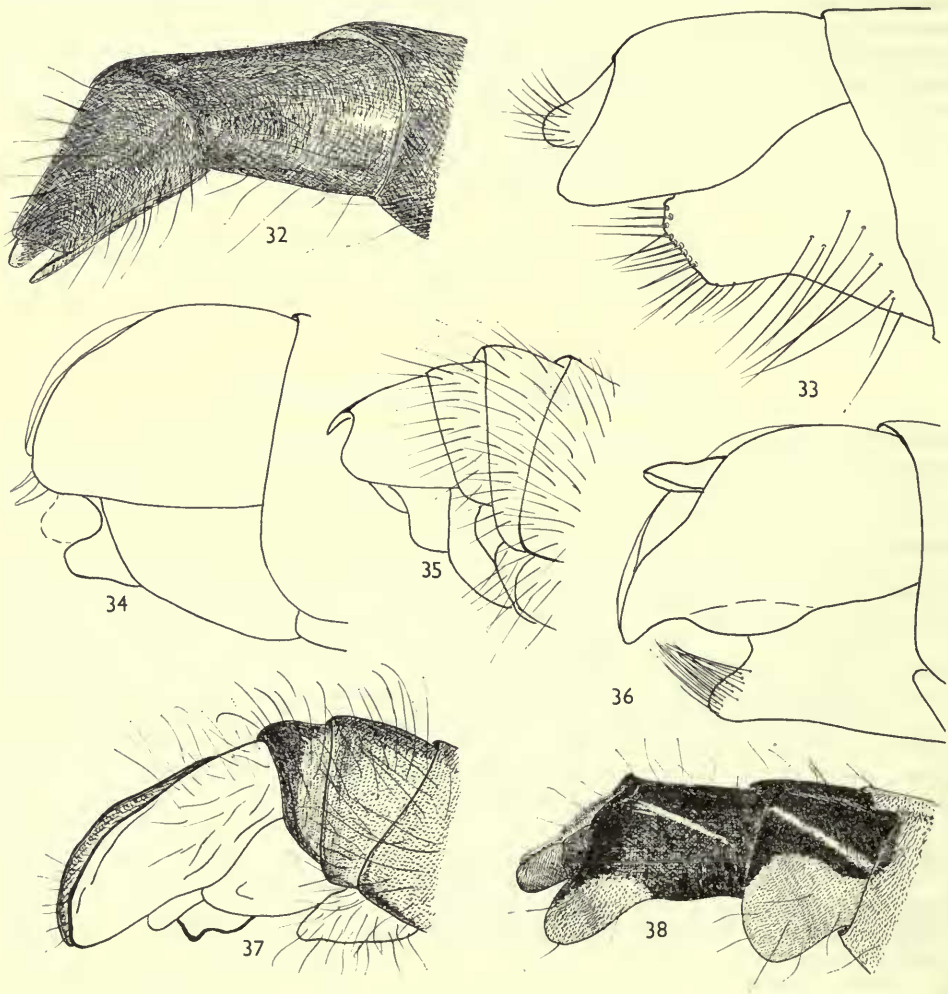
Holotype in Naturhistorisches Museum, Vienna, lent to me for study.

Distribution. Cape Province : Algoa Bay, 16.xi.82 (*Dr. Brauns*).

Rhipidocephala angustior sp. n.

Discocephala analis Macquart; Hermann, 1926, *Verh. zool.-bot. Ges. Wien* **74**: 177. [misidentification]

The following description is based upon the male specimen in the Naturhistorisches Museum, Wien, which was kindly lent to me by Prof. Max Beier. Hermann wrote of this specimen that although it had no locality label, and despite certain differences, he felt convinced that it was correctly identified as being Macquart's *analis*. It seems to be conspecific with a female in the British Museum from S. Africa, which I had already set aside as an undescribed species.



FIGS. 32–38. Genitalia of *Rhipidocephala*: 32, *fimbriata* ♀; 33, *fimbriata* ♂; 34, *manicata* ♂; 35, *doornensis* ♂; 36, *speciosa* ♂; 37, *angustior* ♂; 38, *quadrifaria* ♀.

Among the species that have the male epandrium and the female ovipositor extended horizontally, *angustior* is distinguished by the leg colour, and by not having the fore margin of the wing expanded by broadening of the costal cell. In both sexes it is generally more furry than related species.

♂ *Head.* Frons and face entirely tomented : frons dark dully shining black through brown tomentum, and with abundant yellow hairs, not only on ocellar tubercle but on sides of frons as well ; facial tomentum white above and laterally more brown beneath moustache, which is dense and dark yellow. Antennae black, type C (Text-fig. 4), basal segments with yellow hairs. Palpi and proboscis black with long yellow hairs [Macquart says : *palpes fauves*]. Occiput white on eye-margins, brown elsewhere, with abundant yellow hairs.

Thorax. Mesonotum grey with fairly distinct black-brown stripes, narrow median, tapering posteriorly, and lateral spots rather restricted in area. Posterior mesonotum and scutellum grey, latter with dense white rim. Hairs yellow, very long, erect and dense, giving thorax a furry appearance. Pleura grey, mesopleuron more brown, hairs pale yellowish or white.

Abdomen dorsally shining black, but entirely sclerotized, with no membranous area except for a narrow, yellow, transverse groove on segments 1–2. Dorsum of abdomen shining black, extreme sides narrowly margined with yellow tomentum ; venter with yellowish tomentum. Hairs dense, fine, yellow, rather shorter dorsally, longer laterally and ventrally, giving a furry appearance. Male genitalia prominent, orange, epandrium extending posteriorly as two large, pointed lobes (Text-fig. 37).

Legs. Coxae like pleura. Femora shining black, red only at extreme base ; tibiae and tarsi orange, each segment narrowly black at tip. Hairs and bristles of legs yellow.

Wings pale smoky, darker brown basally, and especially in costal cell, which is not broadened as it is in several related species.

Length of body 7 mm. ; of wing 6 mm.

♀ similar, except that hairs are greyish rather than deep yellow. Ovipositor broad, flattened, bare and shining, eighth tergite being continuous with shining median band of abdomen.

Holotype ♀. Cape Province : Ceres, ix.1920 (*R. E. Turner*). In B.M. (N.H.). I make one of the females holotype because the only male, the one seen by Hermann, is without even a continental locality.

Paratypes : Cape Province : Ceres, 1–12.xi.1924 (*R. E. Turner*), 1 ♀ ; 1 ♂ paratype, without locality, in the Vienna Museum.

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